REMARKS

Claims 1-21 are pending in the application. The Applicant hereby requests further examination and reconsideration of the application for the following reasons.

In the event that the Examiner believes that this response does not place the application in condition for allowance, the Applicant requests a telephonic interview between the Examiner and the Applicant's attorney Ian Hughes to discuss this amendment. The Applicant requests that the Examiner call Mr. Hughes (215-557-6659) to arrange a convenient time for such an interview.

In the office action, the Examiner rejected claims 1-21 under 35 U.S.C 102(e) as being anticipated by U.S. Patent No. 6,404,806 to Ginesi et al. (hereinafter "Ginesi"). In response, the Applicant submits that Ginesi does not anticipate the features of Applicant's pending claims.

Applicant's claim 1 recites:

> "providing **transmission rate compensation, . . . the transmit path** compris[ing]: (1) a zero-padding module configured to **append one or more zeros to each set of received downstream coefficients**; and (2) an inverse transform module configured to **convert each set of zero-padded downstream coefficients into a corresponding block of downstream digital samples at the second data rate** [emphasis added]."

As recited in Applicant's claim 1, Applicant's invention provides for transmission rate compensation between first, second, and third rates. Transmission rate compensation includes appending zeros to coefficients at the second rate in a transmit path, the coefficients representing a digital data stream at the first rate encoded by, for example, an inverse fast Fourier transform (IFFT). The zero-padded coefficients are then decoded with, for example, a fast Fourier transform (FFT) to generate digital samples at a third rate. As described in the Background of the Invention at page 2, lines 7-29, transmission rate compensation for discrete multi-tone (DMT) modems arises from the encoding IFFT and decoding FFT sizes (corresponding to the rates at which coefficients or samples are generated) being different. Prior art DMT systems require a separate interpolator to provide transmission rate compensation to generate digital samples at the third rate from decoded coefficients. The zero-padding in the transmit path, as recited in Applicant's claim 1, allows the decoding process in the receive path to generate the digital samples without a separate interpolation.

See Applicant's Specification, at page 5, line 14, to page 6, line 3. Claims 11 and 21 recite similar features to those of claim 1.

Ginesi does not describe the problem of transmission rate compensation, and does not describe or even suggest zero-padding of coefficients in the transmit path for transmission rate compensation. Ginesi describes a typical prior art DMT modem (Ginesi, FIG. 1 and accompanying description). In particular, Ginesi describes a method of applying equalization to the signal in the receive path of the DMT where the equalization accounts for effects of the overall channel impulse response that the signal passes through. See Ginesi, at Abstract, and at col. 6, lines 22-60. The channel frequency response is estimated by using a predetermined periodic signal without a cyclic prefix where the periodic signal is encoded (with an IFFT in the transmit path) and transmitted to the far-end receiver. The far-end receiver decodes (with an FFT in the receive path) the transmitted signal and divides the decoded signal by the predetermined periodic signal to generate the channel estimate. An IFFT is applied to the channel estimate to generate the channel impulse response estimate.

In Ginesi, the channel impulse response is represented by matrix H. The matrix H is built using weights h_k for $0 \leq k \leq v$, and zero-padding is employed to fill the matrix positions. See Ginesi, col. 6 lines 44-60. The matrix H is then employed to generate the equalizer coefficients. See Ginesi, col. 7, line 52, to col. 8, line 67. Consequently, the zero-padding of Ginesi, employed in the receive path to fill a matrix of impulse response weights used to generate equalizer tap values, is different from the zero-padding of Applicant's claim 1, employed in the transmit path to augment coefficients after encoding to enable transmission rate compensation. Further, Ginesi does not describe or even suggest that zero-padding may be employed for any other purpose, such as transmission rate compensation.

Ginesi does not describe or suggest the problem of transmission rate compensation, but rather describes channel equalization. In addition, Ginesi does not describe or suggest the zero-padding for transmission rate compensation, but rather describes zero-padding of a channel estimate matrix to generate tap values for the equalization. Finally, Ginesi describes insertion of a signal in the transmit path, and zero-padding in the receive path. Therefore, Ginesi does not anticipate or obviate zero-padding of coefficients in the transmit path for transmission rate compensation, as recited in Applicant's claims.

For all these reasons, the Applicant submits that claim 1 is allowable over Ginesi. For similar reasons, the Applicant submits that claims 11 and 21 are also allowable over Ginesi. Since claims 2-10 and 12-20 depend variously from claims 1 and 11, it is further submitted that those claims are also allowable over Ginesi. The Applicant submits therefore that the rejection of claims 1-21 under § 102(e) have been overcome.

In view of the above amendments and remarks, the Applicant believes that the pending claims are in condition for allowance. Therefore, the Applicant believes that the entire application is now in condition for allowance, and early and favorable action is respectfully solicited.

Respectfully submitted,

Date: October 3, 2003

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